

REMARKS/ARGUMENT

By this Amendment, claim 4 has been amended, claims 1-3 and 6-10 have been canceled and new claims 11-15 have been added. Thus, claims 4, 11-15 remain pending in the present application.

Fig. 1 is proposed to be amended by adding a line leading from PC 3 to controller 8, as marked in red on the attached copy thereof. Approval of the drawing change is respectfully requested.

In the present application, independent claims 1 and 2 have been canceled and rewritten as new independent claims 11 and 12 to place the claims into the format preferred in U.S. practice. Applicant respectfully submits that the new claims were not presented for any reasons related to patentability under the interpretation of Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co. Ltd., 324 F.3d 558, 56 USPQ2d 1865 (Fed. Cir. 2000), as canceled claims 1 and 2 recite the same subject matter now recited in claims 11 and 12 which patentably distinguish the claimed invention over the prior art of record.

Claims 6-10 have been objected to under 37 C.F.R. § 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Claims 6-10 have been canceled and replaced with claims 13-15, of which claims 13 and 14 are independent and claim 15 is dependent from new independent claim 14. Applicant respectfully submits that this ground of objection has been overcome, whereupon withdrawal of the same is respectfully requested.

Claims 1 and 6 have been rejected under 35 U.S.C. § 112, first paragraph, as reciting both an output voltage and an output current, which was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention.

Claims 1 and 6 have been canceled, with new claim 11 substituting for canceled claim 1. Claim 11 recites a voltage of an output signal from the charge pump, thereby obviating the ground of rejection set forth under 35 U.S.C. § 112. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 1, 2, 6 and 7 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Hirose, U.S. Patent No. 5,598,405, and claims 3-5, and 8-10 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hirose.

Hirose discloses a PLL circuit which, when the PLL circuit is in a standby state, feeds a control voltage to one of the electrodes in the VCO to compensate for current lost through leakage through the other electrode. In other words, the control voltage is variably fed to the VCO independently of any output from the charge pump or the phase comparator, when the PLL circuit is in a standby state (when no signals are being compared by the phase comparator). The goal to be achieved by Hirose is to maintain the frequency of oscillation of the VCO at a constant level.

New independent claim 11 recites that "when the charge pump output signal voltage changes to a value close to one of the driving limits thereof, . . . a power supply signal having a voltage which cancels the change is inputted to the VCO" in addition to the output signal from the charge pump which is based on a differential signal outputted from the phase comparator. As discussed above, Hirose's control voltage is only inputted to the VCO based on leakage of current therefrom in a standby state of the PLL, and is entirely unrelated to any output from the charge pump or phase comparator.

Independent claim 13 contains the same features believed to distinguish claim 11 over the prior art of record, and is accordingly submitted to be patentable over the same reasons attributable to the latter.

Claim 12 recites that the "VCO is driven by the output signal from the charge pump and a power supply signal having a voltage controlled based on the set frequency, to thereby widen an apparent lock range of the PLL." The lock range of a PLL circuit is measured by the frequency variation range which can be applied into the circuit and still yield an effective stabilizing function of the VCO frequency by the circuit. Thus, the apparent lock range is increased when the voltage range "correctable" by the VCO increases. By compensating for large voltage changes from the charge pump (due to large differential signals outputted from the phase comparator), the claimed PLL circuit is able to lock at the desired frequency despite a change in voltage larger than the PLL would otherwise be able to handle.

In contrast, since Hirose's control voltage inputted to the VCO is independent from any output from the charge pump or phase comparator thereof, the lock range of Hirose's PLL circuit is unaffected by the control voltage provided the VCO.

Independent claim 14 contains the same features believed to distinguish claim 12 over the prior art of record, and is accordingly submitted to be patentable over the same reasons attributable to the latter.

In view of the foregoing, Applicant respectfully submits that the claimed invention as recited in claims 11-15 are not anticipated or rendered obvious by Hirose, whereupon reconsideration and withdrawal of the rejections . Applicant further submits that the present application is currently in condition for allowance. Accordingly, favorable action in this regard is courteously solicited.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Ellen S. Tao", is written over a horizontal line.

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